**Final Report**
**(2003-07-09)**

**CANADIAN CULTURE ONLINE (CCO) POLICY:**

# METADATA STRATEGY

# AND

# DEVELOPMENT

# OF A

# MATRIX

# OF

# METADATA ELEMENTS

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**Metadata strategy and development of a metadata matrix**

In the spring of 2003, the Canadian Culture Online Branch charged a team of experts from Athabasca University with developing and proposing a strategy on the creation of metadata, as well as proposing a matrix based on a set of metadata elements that can be applied to cultural content on the Internet. The final report was submitted to the Branch in July 2003.

It should be noted that this report does not reflect the policy of Canadian Culture Online nor that of the Department of Canadian Heritage in this regard. Rather, it is meant as a tool for discussion purposes to be used to develop a strategy in this regard. The French terms used in this document are an unofficial translation of recognized English terms, since official terminology did not exist in standards documentation at the time this report was submitted.

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1. The focus of this project is strategic. The work on the CCO Metadata Matrix is focused on the identification of the required metadata elements. Only when the decision on the metadata elements comprising the CCO Metadata Matrix has been taken can steps pertaining to development and implementation be undertaken.

   The approach developed here at the "strategic" level facilitates an IT-enabled implementation, as well as one which is architecturally structured to be bilingual (with multilingual expandability).

2. It is intended that this Report be reviewed by the different types of stakeholders as well as the CCO's Standards, Research and Development Sub-Committee.

# 1.0 INTRODUCTION

## *1.1 BACKGROUND AND OBJECTIVE*

In Spring 2001, the Minister of Canadian Heritage formally announced the launch of the Canadian Culture Online (CCO) policy, a three year strategy, involving more than $200 million, designed to facilitate the development of, and ensure access to, digital cultural content on the Internet. A National Advisory Board for Canadian Culture Online was appointed by the Minister in March 2002 to provide advice on the general direction and continued development of Canadian Culture Online (CCO) in light of the continuing evolution of the Internet. The Standards, Research and Development Sub-Committee of the National Advisory Board advises on activities and initiatives in order to ensure that appropriate standards are applied which allow content to be developed and used in a seamless, meaningful, and transparent way, that is compatible with work being done abroad. As a first priority, the Standards, Research and Development Sub-Committee is expected to deliver a recommended direction and set of guidelines for fund recipients regarding metadata standards.

The Standards, Research and Development Sub-committee is considering a preliminary list of policy questions whose answers will result in a metadata strategy, which will contain a set of recommendations on the implementation of metadata. Key differences in the types of stakeholders and the complexity of projects exist, and it is clear that no one approach to metadata would be appropriate – or adequate - to suit all needs. In addition, questions regarding the granularity of implementation, and the related issue of the desired type of discovery, (e.g., at the resource or object level), need to be addressed. The Standards, Research and Development Sub-Committee has undertaken the development of a "matrix" tool to clearly identify different recommendations for these different situations.

The Standards , Research and Development Sub-Committee has obtained expert advice to help develop a strategy for the implementation of metadata for Canadian Culture Online stakeholders. The findings of this exercise will help clarify which elements of which standards, and which application profiles should be used to implement those standards, for various stakeholders undertaking different types of projects.

This expert advice has been obtained from members of the Athabasca University. The team members assigned to this project are recognized experts in the field of metadata standards, and have been leaders both nationally and internationally in the development of standards, specifications and application profiles through extensive participation in international standards bodies and Canadian working groups related to metadata and its implementation.

## 1.2 Purpose of Work and Tasks Undertaken

The purpose of this work is to provide advice to the Standards, Research and Development Sub-Committee with respect to which standards and application profiles should be applied to various types of CCO projects, and at what levels of granularity. The team of experts have worked with the Standards, Research and Development Sub-Committee, and consulted with Canadian Culture Online stakeholders, to develop and finalize this metadata strategy and the development of a matrix of metadata elements for digital cultural resources.

There are three specific tasks which are the responsibility of the team of experts, namely,

1. Information Gathering

   - Review the results of the "Assessment of Fund Recipients' Approaches to Metadata" study and become familiar with the needs of Canadian Culture Online's stakeholders, from both a content production and usage perspective;
   - Understand the needs and objectives of the Standards, Research and Development Sub-Committee and Canadian Culture Online; and,
   - Research and draw upon the work being done in other national and international standards and discussion groups on metadata.

2. Developing Strategic Recommendations

   Develop the metadata matrix by analyzing and making recommendations with respect to the types of metadata and the level of granularity at which metadata implementation needs to take place, for the various types of stakeholders and projects supported by Canadian Culture Online.

3. Consulting and Finalizing the Metadata Strategy

   - Work with the project team and consult with Canadian Culture Online stakeholders to finalize the metadata matrix; and,
   - Evaluate the matrix, highlight how the metadata strategy will impact fund recipients, and provide advice on implementation of this strategy.

In addition, other tasks included;

- communicating with the CCO project team on all matters with respect to the recommendations that have been developed through analysis of the assessment of metadata schemas; and,
- providing regular updates and deliverables prior to the submission of the Final Report.

The results of completing these tasks, within the resources made available, are captured in this Final Report.

# 2.0 KEY PRINCIPLES GOVERNING THE METADATA STRATEGY AND DEVELOPMENT OF THE MATRIX OF METADATA ELEMENTS

There are a number of key principles which govern the development of the CCO metadata strategy as well as the matrix of metadata elements for digital cultural resources. These principles serve as a synthesis of ,

- various external requirements, including applicable legislation as well as international and national standards;

- the three objectives[1] of the CCO Policy which are:

  1. *To achieve a critical mass of quality cultural content on the Internet in both English and French*[2];
  2. *To build a conducive environment for Canada's cultural industries, institutions, creators and communities to produce and make available Canadian cultural content on the Internet; and,*
  3. *To increase visibility and build audiences for Canadian digital cultural content.*

- generic requirements associated with data management and interchange, metadata, electronic data interchange, data integrity, access, privacy, security, rights management, etc.
- specific metadata requirements arising from the nature of the content and use of digital cultural resources;
- documentation provided by Canadian Heritage and discussions with key stakeholders; and,
- facilitating implementation and use of metadata in a cost-effective and efficient manner.

This synthesis resulted in eight (8) high-level principles. They are:

1. ***support the requirements of the Official Languages Act;***

[1] On the CCO Policy, see further http://www.pch.gc.ca/progs/pcce-ccop/about_e.cfm .

[2] It is outside the remit of this project, to ensure "quality" aspects of the metadata for a CCO sponsored cultural resource. However, the work completed here from a strategic perspective as well as the identification of the actual metadata elements themselves (see Chapter 4) has been designed to fully support data quality, as well as data integrity aspects, of the metadata accompanying each digital cultural digital resource. Ensuring data quality and data integrity of metadata for digital cultural resources is a development and implementation challenge.

2. ***support the requirements of other Canadian and/or provincial/territorial legislation impacting the creation and use of digital cultural resources;***

3. ***ensure full linkage and integration with the National Standards System (NSS) of Canada;***

4. ***maximize the use of existing international and national standards;***

5. ***support the requirements of the federal government-wide Treasury Board standard for metadata (TBITS-39);***

6. ***maximize IT-enablement of metadata;***

7. ***have the ability to support various levels of granularity; and,***

8. ***view Canadian bilingual and IT-enablement requirements as a subset of global multilingual requirements.***

**Principle 1: Support the Requirements of the Official Languages Act**

All metadata elements must support the bilingual requirements of the Official Languages Act (OLA), i.e., have English and French language equivalents. This pertains not only to the name and the definition of each metadata element, but also to other attributes which may be required for either the metadata element or data element.

The solution here is to assign a unique, unambiguous and linguistically neutral identifier to each such entity/object (and at whatever level of granularity)[3] and then provide the English and French language equivalents of the semantics/meaning.

Also, a "linguistic sensitivity indicator" should be one of the mandatory attributes of each metadata element (and/or data element). This will allow one to differentiate between (1) linguistically neutral content such as proper nouns, numeric representations of date, time, units of measure, etc., symbols and icons, etc.; and (2) content of a more linguistically sensitive nature such as which may require paired English/French data elements or use of coded domains, (e.g. tables, pick-lists, etc.).[4]

[3] {See further ISO/IEC JTC1/SC36N0307 *"Maximizing Bilingual/Multilingual e-Learning Capability Through Use of "Identifiers" instead of "Names"*, available at http://www.jtc1sc32.org}.

[4] ISO/IEC CD 18022 "*IT-enablement of Widely-Used Coded Domains*" contains a code set for linguistic sensitivity indicators. It should be utilized when this project moves to the detailed specification stage.

**Principle 2: Support the Requirements of other Canadian and/or Provincial/Territorial Legislation Impacting the Creation and Use of Digital Cultural Resources**

Beyond its English/French Official Languages requirements, Canada's cultural heritage is multilingual in the nature of its resources. Various federal Acts of Parliament as well as provincial/territorial legislation recognize and make provision for the submission of documents in languages other than English and French including Canadian aboriginal/native languages, (e.g., the Canadian Environmental Assessment Act). In addition, at the territorial level, Inuktitut is an official language in Nunavut.

### 3. Principle 3: Ensure full linkage and integration with the National Standards System (NSS) of Canada

The National Standards System of Canada was established by an Act of Parliament. This Act[5] also established the Standards Council of Canada (SCC). The SCC has the Canada-wide mandate to coordinate the development of National Standards of Canada and Canada's participation in international standards development, i.e. via the International Standards Organization (ISO), the International Electrotechnical Commission (IEC), etc.

One goal of the Standards, Research and Development Sub-Committee of the Canadian Culture Online's National Advisory Board is to advocate and maximize the use of existing (and under development) international and national standards forming part of the NSS and the Standards Council of Canada (SCC). The SCC has completed a wide-ranging consultation and in-depth study of the directions it should take and strategies it should pursue. The "metadata strategy" proposed in this Report is in harmony with, and supports, the "Canadian Standards Strategy".[6]

**Principle 4: Maximize Use of Existing International and National Standards**

The CCO Metadata Strategy and development of the matrix of metadata elements is to be based on, i.e. derived from, existing international and national standards to the greatest degree possible.

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[5] Known as the "*Standards Council of Canada Act / Loi sur le Conseil canadien des normes*", this Act was revised, i.e. updated and streamlined in 1996. This legislative change coupled with major changes in information and telecommunications technologies, in turn led the Council to undertake a major effort to develop a Canadian Standards Strategy reflecting these changes and other requirements.

[6] See further the Canadian Standards Strategy (CSS)/Stratégie canadienne de normalisation (SCN). The CSS/SCN can be found and downloaded from the SCC website at < http://www.scc.ca >. The Canadian Standards Strategy, launched in 2000, *"serves as a blueprint for the future structure of standardization activity in Canada. Its purpose is to provide direction and leadership on how to use standardization to best advance the social and economic well-being of Canadians in a global economy".*

This means that international and national standards relevant to this CCO "Metadata Strategy and Matrix" have been identified. {See further Annex G}. It also means that applicable parts of these standards have been applied in the CCO Metadata Matrix[7]. As such the Matrix of Metadata elements (presented below in Chapter 4) represents an up-to-date integration of the most recent international standards as well as best practices.

**Principle 5: Support the Requirements of the Federal Government-wide Treasury Board standard for metadata (TBITS-39)**

The "*TBITS 39 : Treasury Board Information Management Standard, Part 1: Government On-Line Metadata Standard*[8] */ NCTTI 39: Normes de l'information et de la technologie du Conseil du Trésor, Partie 1 : Norme des métadonnées du Gouvernement en direct »*[9] specifies a "minimum" number of required metadata elements. TBITS-39 specifies five mandatory data elements which must be applied to all federal government resources posted on Government of Canada web sites and made available via the Internet. These five "metadata" data elements are based on the Dublin Core Version 1.1, a subset of which (in slightly modified form) are now found in the new ISO standard, i.e. ISO 15836.[10]

In order to ensure that the three objectives of the CCO Policy are also supported, and especially the third objective (see above) to make Canadian digital cultural content visible and accessible to all Canadians, all the fifteen metadata elements of the ISO 15836 Dublin Core international standard have been made mandatory {See below Figure 1 as well as Annex A}

**Principle 6: Maximize IT-enablement of Metadata**

IT-enablement pertains to the transformation of current standards utilized in many areas from a manual to a computational perspective so as to be able to support computational integrity and electronic data interchange. IT-enablement applies particularly to semantics/meaning, i.e. where the permissible contents of a data element can be

[7] Annexes A, C, and D pertain to specific international, i.e. ISO, standards, parts of which are utilized in the construction of the Matrix. In addition, Annex B pertains to the CanCore/LOM metadata elements utilized.

[8] Available at http://www.cio-dpi.gc.ca/its-nit/standards/tbits39/crit391_e.asp .

[9] Available at http://www.cio-dpi.gc.ca/its-nit/standards/tbits39/crit391_f.asp .

[10] It is outside the scope and purpose of this project to address the need for existing TBITS 39 to be amended to reflect changes to Dublin Core becoming an international standard as well as the need to reference the ISO 639-2/T set of 3-alpha set of codes. This Report already incorporates and supports these and other requirements of international standards. It thus represents the most up-to-date consolidation of international standard. See further Annex A below and ISO/IEC JTC1/SC32 N0962 titled "*Comparative Analysis of Dublin Core Version 1.1 with the New Standard ISO 15836 "The Dublin Core Metadata Element Set"*, available at http://www.jtc1sc32.org}

structured and predefined (e.g., code tables). IT-enablement is especially important in various areas of e-business including e-commerce, e-government, e-learning, etc., (independent of whether these are undertaken on a for-profit or not-for-profit basis). {See below Annex E}

**Principle 7: Have the Ability to Support Various Levels of Granularity**

A key success factor in maximizing interoperability is the degree to which existing ambiguities in the semantics/meaning of the content can be reduced. A major characteristic of cost-effective and efficient operations, services to clients, etc. is "paying attention to details". From a "data" perspective, this need for preciseness in data elements is known as "granularity". With respect to granularity, precision is necessary to avoid ambiguity, maximize search and discovery, as well as integrity and re-useability, etc. The higher the degree of granularity, the greater level of the precision as well as increased probability of discovery.

Quoting ISO/IEC 15944-1:2002 *"Information technology – Business agreement semantic descriptive techniques – Part 1: Operational aspects of Open-edi for implementation"*

> ***"Rule 48***
> ***Standards development work in support of electronic business transactions shall incorporate and support data granularity requirements. The level of granularity reflects the degree of detail appropriate to the level of certainty required in the data being interchanged among the parties participating in a business transaction."***

This rule applies also to metadata. It recognizes that communities of suppliers and users of heritage metadata pertaining to cultural resources require different levels of granularity in their "standard metadata".[11]

> [Note: One result of the implementation of the metadata strategy and matrix of metadata elements will be the development of several levels of granularity of heritage metadata. Some are already presented in Chapter 4 as Matrices 2, 3, 4 and 5]

**8. Principle 8: View Canadian Bilingual and IT-enablement Requirements as a Subset of Global Multilingual Requirements**

Further, global requirements are multilingual in nature. Strategically, Canadian Official Language requirements should be viewed as a subset of multilingual requirements[12]. This

[11] {See ISO/IEC 15944-1:2002 which is available at http://www.jtc1.org under "Freely available documents"}.

[12] The Matrix Design (see Chapter 3.3 below) and the set of Matrices (See Chapter 4.0) have been expressly designed to support this principle of multilingual expandability and facilitate its implementation. Those producing products and services in the online digital cultural sector may well wish to build such features into their product offerings.

metadata strategy makes this assumption. Further, the matrix of metadata elements has been designed and constructed in a manner which not only is bilingual but also facilitates multilingual expandability doing so in a manner which is cost-effective and efficient.

As such this metadata strategy also fully supports the second objective of the CCO policy which is

> *"2. To build a conducive environment for Canada's cultural industries, institutions, creators and communities to produce and make available Canadian cultural content on the Internet".*

We conclude by noting that being able to deliver goods and services world-wide is a challenge. Tailoring one's product to the user environment of the local market, including jurisdictional levels, demands attention to detail, adaptability and flexibility. Being successful in a market requires not only understanding the needs of the clients but also being able to communicate with them in their language. *"Thus multilingualism is good business, is good for business and those developing products and services should think multilingual from the start."*[13]

The Internet represents, and to many is, the global marketplace. This metadata strategy, in support of the CCO Policy, is one which not only provides a conducive environment to Canada's cultural industries, institutions, creators and communities but does so in a manner which facilitates making Canadian content available on the Internet from a global market perspective.

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[13] See further Knoppers, Jake V. Th. *"Global electronic commerce through localization and multilingualism"*, Computer Standards and Interfaces, 20(1998)1001-109.

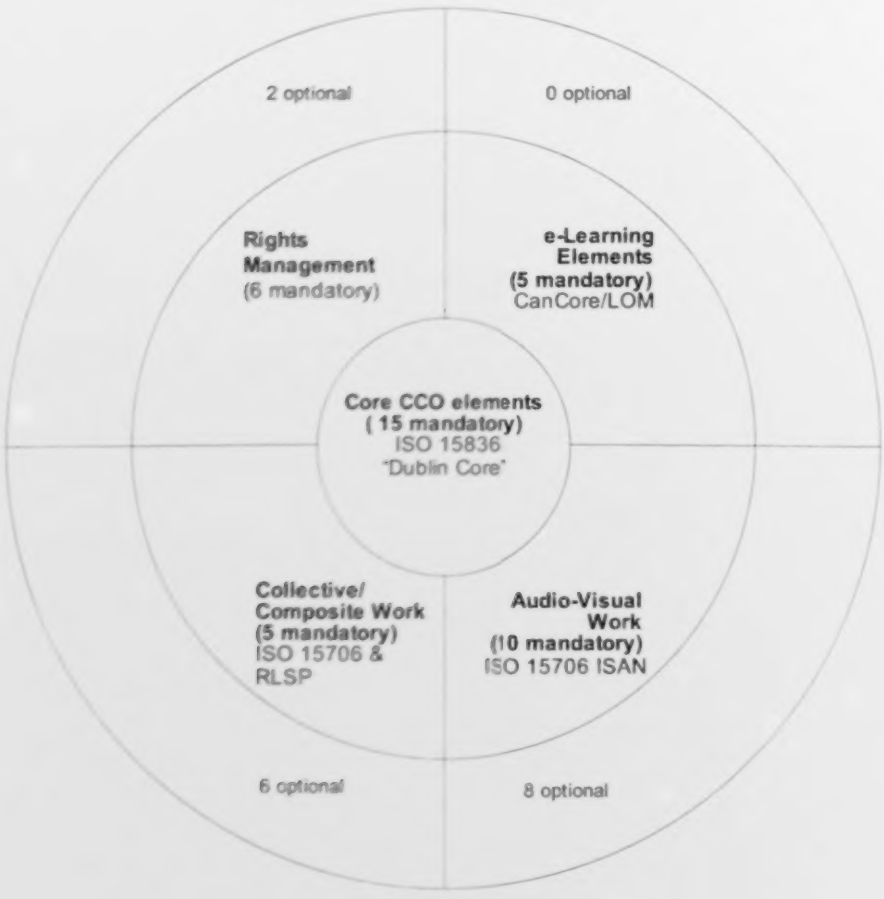
# 3.0 CONSTRUCTION RULES FOR THE DEVELOPMENT OF THE CCO MATRIX OF METADATA ELEMENTS

## *3.1 SUMMARY OF APPROACH*

The approach taken for the construction of the metadata matrix is that,

1) a minimum, i.e. core, set of metadata elements apply at all times, to any and all CCO sponsored digital cultural resource(s);
2) additional sets of minimum metadata elements apply if the digital resources resulting from a specific CCO project is of a certain nature. Various types of "certain nature" already identified include "e-learning", "audio-visual work", "composite/collective work" and "rights management"; and,
3) optional metadata elements are encouraged to be used at all times.

Figure 1 illustrates this approach which is further explained in the sections which follow.



## 3.2 OPERATIONAL RULES

**Overall Rule: Metadata is required to describe the digital cultural resources resulting from projects funded via CCO.**

In addition to ensuring that the third objective of the CCO Policy is supported through metadata, i.e. increased visibility and accessibility, a primary purpose of the CCO Metadata Strategy and this Matrix is to enable Canadian Heritage to maximize its return on CCO investments in the creation of digital cultural resources and/or the conversion of existing cultural resources into their digital equivalents.

The primary means for supporting this Overall Rule is to ensure that of **ensuring that for each such CCO-sponsored digital resource, a prescribed set of descriptive information is created, i.e. "metadata", which will maximize their discovery, access and re-use.**

In support of this overarching (or macro) Rule, are a number of operational rules which are to be adhered to/complied with, by all CCO funding recipients.

The draft set of four (4) **Operational Rules** are formulated based on work done to date, meetings and teleconference calls. They are as follows:

**Rule 1: Every CCO sponsored project must include the submission of the minimum set of mandatory metadata elements, i.e., descriptive information, for the digital cultural resource(s) as specified in Matrix 1 of the CCO-MAP, irrespective of the nature of the amount of the CCO contribution.**

Note: Successful CCO recipients are encouraged to provide descriptive information for as many of the other metadata elements as possible where applicable.

**Rule 2: Depending on the nature or purpose of the CCO project, and the resulting digital cultural resource created, additional metadata elements become applicable.**

Thus additional descriptive information is required as follows:

**Rule 2.1: If the CCO sponsored project is of the nature of a "Learning Resource", additional (Mandatory, Conditional, mandatory subject to a Conditional) metadata elements are required.**

These are presented in Matrix 2 {See also Annex D};

**Rule 2.2: If the CCO sponsored project is of the nature of an "Audio-Visual" work, additional (Mandatory, Conditional, mandatory subject to a Conditional) metadata elements are required.**

These are presented in Matrix 3 {See also Annex D};

**Rule 2.3: If the CCO sponsored project is of the nature of a "composite or collective work", additional (Mandatory, Conditional, mandatory subject to a Conditional) metadata elements are required.**

These are presented in Matrix 4 {See also Annex D};

**Rule 2.4: Depending on the nature of the availability, access to and rights which pertain to the digital object(s) resulting from a CCO sponsored project, additional (Mandatory, Conditional, mandatory subject to a Conditional) metadata elements are required.**

These are presented in Matrix 5 {See also Annex D}.

Based on the above rules and the ability to support them, the five (5) matrices have been completed in draft form.

*[NOTE 1: For these five (5) matrices, we have focused on metadata elements of a "descriptive" and not "technical" nature. Many data elements of a "technical" nature can be added based on the ISO/IEC JTC1/SC29 series of MPEG standards. {See further Annex X}]*

**Rule 3: The assignment of the ID Code in the CCO-MAP, is based on a block-numeric approach for the assignment of ID codes for the metadata elements.**

The allocation of the block-numeric system is as follows:

- 0100 -> 1999 block supports **Rule 1** and is thus reserved for Dublin Core entries with each of the fifteen primary elements being assigned 0100, 0200, etc. in the order as per ISO 15836:2003 Dublin Core standard.

- 2000 -> 2999 block supports **Rule 2.1** and is thus reserved for elements in support of cultural resources which also serve as learning resources. The additional elements here are based on CanCore and IEEE LOM.

- 3000 -> 4999 block supports **Rule 2.2** and thus is reserved for elements pertaining to cultural resources which are of the nature of audio-visual works. The requirements here for metadata elements are based on the international standard ISO 15706:2002 *"Information and documentation – International Standard Audio-Visual Number (ISAN) / Information et documentation – Numéro international normalise d'œvre audiovisuelle (ISAN)"* as stated in its Annex D.2

"Descriptive information for registration of new audiovisual works".[14]

- 5000 –> 6999 block supports **Rule 2.3** and is thus reserved for elements pertaining to a cultural resource which is of the nature of being an item in a collection, an episode in a series, i.e., a distinguishable part of a large work and utilized and referenced as such. The requirements presented here are based on a combination of that for "episodes in a series" of ISO 15706 and archival & library practices for items in a collection (very simplified).

- 7000 –> 7999 block supports **Rule 2.4** and is thus reserved for elements pertaining to additional information pertaining to access, availability, copyright and related rights management requirements

- 8000+ is open for additional assignment/requirements

Within each block, the assignment of the ID numbers for primary metadata elements is done in increments of 100. This leaves adequate room for granularity expansion at further hierarchical levels and more detailed decompositions.

**Rule 4: The design of the Matrix shall be structured to support English/French language equivalency (and multilingual expandability).**

The design of the Matrix has been structured to support this rule. {See Chapter 3.3 following}.

Finally, with respect to Matrices 2, 3, 4, and 5, we have adapted the source standards referenced to the context of this project. Primarily this involves substituting the phrase "cultural resource" for more specific text found in the sources cited. The purpose here is to ensure consistency in terminology throughout all the matrices. It also makes the matrix of metadata elements more user friendly to the requirements and context of CCO Policy. The essential semantics/meaning of the names and definitions have not been changed. Annex B provides an example of this adaptation.

[14] For a summary of ISO 15706:2002 ISAN standard, see further Annex C.

## 3.3 MATRIX DESIGN

The assignment of the columns in the Matrix is as follows:

| Col. ID | Name of Column | Purpose /Use | Codes/Acronyms Used and/or Notes |
|---|---|---|---|
| 00 | Source | A column used here to indicate the (primary) source of the data element | DC = Dublin Core (as per ISO 15836)<br>CC/LOM = CanCore & IEEE LOM<br>ISAN = ISO 15706<br>CH = Canadian Heritage, i.e. as combination/integration of various sources as deemed applicable from a CCO perspectives {For these sources see Annexes G & H} |
| 01 | IT-Interface: CCO Metadata Application Profile ID | To uniquely and unambiguously identify this "MAP" | CCO-MAP |
| 02 | IT-Interface: Data Element ID | To uniquely identify each metadata element within this CCO-MAP schema | Based on a block-numeric approach |
| 10 | Requirement Status Code | To indicate in a numeric, i.e. linguistic neutral form, the degree and nature to which the value(s) of contents of this metadata element shall be completed | The Codes are:<br>1- Mandatory<br>2- Conditional<br>3- mandatory subject to a Conditional<br>4- Optional<br>9- Not applicable<br>{See further Annex D} |
| 52 | Human Interface Equivalent: English - Element Name | The Human Interface Equivalent (HIE) name of this metadata element in English | |
| 53 | Human Interface Equivalent: English - Element Definition | The Human Interface Equivalent (HIE) definition of this metadata element in English | |
| 62 | Human Interface Equivalent: French - Element Name | The Human Interface Equivalent (HIE) name of this metadata element in French | Provided where already available, Canadian Heritage will have to complete this |
| 63 | Human Interface Equivalent: French - Element Definition | The Human Interface Equivalent (HIE) definition in French of this metadata element | For Canadian Heritage to add/complete |
| n3+ | Human Interface Equivalent: Element Name – in any language | The Human Interface Equivalent (HIE) name of this metadata element in any language as specified | Note: Not included in the current set of matrices but included here to demonstrate multilingual expandability. |
| n4+ | Human Interface Equivalent: Element Definition – In any language | The Human Interface Equivalent (HIE) definition of this metadata element in any language as specified | Note: Not included in the current set of matrices but included here to demonstrate multilingual expandability. |

# 4.0 CCO MATRIX OF METADATA ELEMENTS

COMPLETE MATRIX (consisting of 5 sub-matrices)

## 4.1 MATRIX 1: GENERAL – APPLICABLE TO ALL DIGITAL CULTURAL RESOURCES

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | **GENERAL** | | |
| DC | CCO-MAP | 0100 | 1 | Title | A name given to the cultural resource | titre | |
| DC | CCO-MAP | 0200 | 1 | Creator | An entity primarily responsible for making the content of the cultural resource | créateur | |
| DC | CCO-MAP | 0300 | 1 | Subject | The topic of the content of the cultural resource | sujet | |
| DC | CCO-MAP | 0400 | 1 | Description | An account of the content of the cultural resource. | descrip-tion | |
| DC | CCO-MAP | 0500 | 2 | Publisher | An entity responsible for making the cultural resource available. | éditeur | |
| DC | CCO-MAP | 0600 | 2 | Contributor | An entity responsible for making contributions to the content of the cultural resource. | contribu-teur | |
| DC | CCO-MAP | 0700 | 1 | Date | A date associated with an event in the life cycle of the cultural resource. | date | |
| DC | CCO-MAP | 0800 | 2 | Type | The nature or genre of the content of the cultural resource. | type de la ressource | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| DC | CCO-MAP | 0900 | 2 | Format | The physical or digital manifestation of the cultural resource. | format | |
| DC | CCO-MAP | 1000 | 1 | Identifier | An unambiguous reference to the cultural resource within a given context. | identifiant | |
| DC | CCO-MAP | 1100 | 2 | Source | A reference to a resource from which the present cultural resource is derived. | source | |
| DC | CCO-MAP | 1200 | 1 | Language[15] | A language of the intellectual content of the cultural resource. | langue | |
| DC | CCO-MAP | 1300 | 2 | Relation | A reference to a related resource. | relation | |
| DC | CCO-MAP | 1400 | 1 | Coverage | The extent or scope of the content of the cultural resource. | couverture | |
| DC | CCO-MAP | 1500 | 1 | Rights | Information about rights held in and over the cultural resource. | droits | |
| | | | | | | | |

[15] It is important here that one utilize the names or 3-alpha codes for languages as found in ISO 639-2/T (and not the 2-alpha codes or the 3-alpha codes taken from ISO 639-2/B). See further below the note on ISO 639 in Annex E

## 4.2 MATRIX 2: ADDITIONAL METADATA ELEMENTS REQUIRED IF THE DIGITAL CULTURAL RESOURCE IS ALSO A LEARNING RESOURCE (BASED ON CANCORE/LOM)

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | **2000** | 2 | | **LEARNING RESOURCE** | | |
| CC/ LOM | CCO-MAP | 2001 | 1 | Learning Resource Indicator | A Yes/No indicator. Can be used to indicate whether or not the cultural resource also serves as a learning resource<br><br>NOTE 1: If value of 2001 is "Yes" then 2100, 2200, 2300 and 2400 become mandatory | | |
| CC/ LOM | CCO-MAP | 2100 | 3 | Learner Interactivity Level | The degree of interactivity chracterizing this cultural resource.<br><br>Note: Interacticity in this context refers to the degree to which the learner can influence the aspect or behaviour of this resource. | | |
| CC/ LOM | CCO-MAP | 2200 | 3 | Intended Learner User Role | Principle user(s) for which this cultural resource was designed for use in a learning context.<br><br>NOTE 1: A resource can be designed for use in multiple contexts. If there | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | is more than one, the most dominant should be stated first. | | |
| CC/ LOM | CCO-MAP | 2300 | 3 | Learning Context | The principle environment within which this cultural resources also as a learning resource and use of it as a learning resources is intended to take place. | | |
| CC/ LOM | CCO-MAP | 2400 | 3 | Learner Typical Age Range | Age of the typical intended user of this cultural resource for learning purposes.<br><br>NOTE 1: This element shall be utilised to refer to the development age for which this cultural resource is intended to be used for learning purposes.<br><br>NOTE 2: If the "development age" differs from the chronological age, this should be stated. | | |
| CC/ LOM | CCO-MAP | 2500 | 3 | Typical Learning Time | Approximate or typical time it takes to work with or through this learning object for the typical intended target audience.<br><br>NOTE:--The " typical target audience" can be | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | characterized by data elements 5.6:Educational.Context and 5.7:Educational.TypicalAgeRange. | | |

## 4.3 MATRIX 3: ADDITIONAL METADATA ELEMENTS REQUIRED IF THE DIGITAL CULTURAL RESOURCE IS ALSO AN AUDIOVISUAL WORK (BASED ON ISO 15706:2002)

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| ISAN | | **3000** | 2 | **AUDIO-VISUAL WORK (AW)** | A work consisting of a sequence of related images with or without accompanying sound, which is intended to be made visible as a moving image through the use of devices, regardless of the medium of initial or subsequent fixation. | | |
| ISAN | CCO-MAP | 3001 | 1 | AW Indicator | A Yes/No indicator.<br>To be used to indicate whether of not the cultural resource is of the nature of an audio-visual work<br><br>NOTE 1: If value of 2001 is "Yes" then 3100, 3200, 3300 and 3400 become mandatory | | |
| ISAN | CCO-MAP | 3002 | 1 | Composite Work Indicator | A Yes/No indicator<br>To be used to indicate whether or not the AW is part of a composite work.<br>If yes, elements 4000+ apply | | |
| ISAN | CCO-MAP | 3100 | 3 | AW Title | Title of a cultural resource which is an audiovisual work<br>Use the form in which it | | |

| Source | IT Interface | | Require-ment Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Applica-tion Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | appears in the work | | |
| ISAN | CCO-MAP | 3110 | 3 | AW Alternate Titles | Alternate title(s) in the original language, if applicable<br>Use the ISO 639-2/T language codes[16] | | |
| ISAN | CCO-MAP | 3200 | 3 | AW Original Language | Original language(s) of a cultural resources which is an audiovisual work<br>Use the ISO 639-2/T language codes[17] | | |
| ISAN | CCO-MAP | 3210 | 4 | AW Other Langu-age(s) | Other language version(s), if known, if applicable<br>Use the ISO 639-2/T language codes[18] | | |
| ISAN | CCO-MAP | 3300 | 3 | AW Reference Year | Year of reference<br>Use the year which appears in the work, where applicable | | |
| ISAN | CCO-MAP | 3310 | 4 | AW Publica-tion Year | Year of first publication or communication to the public | | |

[16] Use the ISO 639-2/T set of 3-alpha codes. See further the note on ISO 639 in Annex G.

[17] Use the ISO 639-2/T set of 3-alpha codes. See further the note on ISO 639 in Annex G

[18] Use the ISO 639-2/T set of 3-alpha codes. See further the note on ISO 639 in Annex G

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| ISAN | CCO-MAP | 3400 | 3 | AW Principal Director(s) | Full name(s) of principal directors<br>Include surname and forename, if known and applicable | | |
| ISAN | CCO-MAP | 3500 | 3 | Principal cast members | Full name(s) of principal cast member(s) or participant(s)<br><br>Include surname and forename, if known and applicable.<br><br>Note: If necessary (e.g. if the cast members can not be identified), the names of principal characters may be supplied in lieu of the names of principal cast members. | | |
| ISAN | CCO-MAP | 3600 | 3 | Duration time | Approximate duration (in minutes and/or seconds)<br><br>Note: Information on duration time is not required for non-linear (e.g. (interactive) audiovisual works | | |
| ISAN | CCO-MAP | 3700 | 3 | AW Type | The type of work (e.g. feature film; series; commercial; recording of | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | a live event, etc.<br><br>*Note: The international ISAN Agency is supposed to supply a list of Categories.* | | |
| ISAN | CCO-MAP | 3800 | 4 | Live/ Animation | Specify whether the work is animated or live action, or a combination of both. | | |
| ISAN | CCO-MAP | 3900 | 4 | Co-Production Indicator | A Yes/No indicator of whether or not this AW is a co-production | | |
| ISAN | CCO-MAP | 3910 | 4 | Main Production Company | The name of the main production company, i.e. where this is a co-production | | |
| ISAN | CCO-MAP | 4000 | 4 | Country (ies) of reference | Specification of either the country(ies) of productions or location of the shoot.<br><br>Note: Use the three digit numeric codes and the name of country(ies) as found in ISO 3166-1 "Country Codes" | | |
| ISAN | CCO-MAP | 4100 | 4 | Script Writer(s) | The full name(s) of the script writer(s).<br><br>Note: Include surname and forename, if known and applicable | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| ISAN | CCO-MAP | 4200 | 4 | Supplementary Information | Include any supplementary information as desired | | |
| | | | | | | | |

## 4.4 MATRIX 4: ADDITIONAL ELEMENTS REQUIRED IF THE DIGITAL CULTURAL RESOURCE IS PART OF A COMPOSITE WORK OR COLLECTION (BASED ON ISO 15706:2002 & RLSP)

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | **5000** | 2 | **COMPOSITE WORK OR COLLECTION** | A cultural resource which contains one or more other cultural resources or parts of a cultural resource, each of which is insubstantial in relation to the entire composite work or collection<br><br>(e.g. an episode in a series, an item in a collection, a serial work in which the part form a sequential relationship to each other, etc. with usually a common title for the composite work or collection as a whole. [Hereafter referred to as a "Part"] | | |
| | | 5001 | 1 | Collection indicator | A Yes/No indicator to state whether or not the cultural resource is a Part of a composite work or collection.<br><br>If Yes, elements 5100, Apply as indicated | | |
| ISAN | CCO-MAP | 5100 | 3 | Collection title | The title of the entire collection, audiovisual | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | work, etc. | | |
| ISAN | CCO-MAP | 5110 | 3 | International Collection ID | The international identifier of the entire collection/work such as ISSN, ISAN, EAN/UPC, etc.<br><br>Note: This can be the ID for the first part or episode registered. | | |
| ISAN | CCO-MAP | 5200 | 3 | Part title | The title of the Part of the collection.<br><br>Note: If the Part has no title, the episode number must be supplied | | |
| ISAN | CCO-MAP | 5300 | 3 | Part Reference Year | The year of the Part, where applicable | | |
| ISAN | CCO-MAP | 5310 | 4 | First Publication Year of Part | The year of the first publication or communication of the Part to the public | | |
| ISAN | CCO-MAP | 5400 | 4 | Part - Principal Creator(s) | The full name of the entity(ies) that are principal creator(s) of the Part. If an AW provide that of the principal directors.<br><br>Note: Include surname and forename, if known and applicable and/or name of the organization. | | |
| ISAN | CCO-MAP | 5410 | 4 | Part Contribu- | The full name of the entity(ies) are | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | tors/ Participants | contributors, participants (e.g. cast members), etc. | | |
| ISAN | CCO-MAP | 5420 | 4 | Part Script Writer(s) | The full name(s) of the script writer(s).<br><br>Note: Include surname and forename, if known and applicable | | |
| ISAN | CCO-MAP | 5600 | 4 | Part Size | Specify the size as appropriate to the forma and format of the Part (e.g. no. of pages, duration in minutes or in seconds, etc.) | | |
| ISAN | CCO-MAP | 5800 | 4 | Part: Supplementary Information | Include any supplementary information as desired | | |
| | | | | | | | |

## 4.5 MATRIX 5: ADDITIONAL ELEMENTS REQUIRED IF THE DIGITAL CULTURAL RESOURCE SUPPORTS RIGHTS MANAGEMENT

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | **7000** | 2 | **RIGHTS INFORMATION** | Information pertaining to availability, access policy, intellectual property, security, liability, costs and charges, etc.<br><br>Note: This section is a more detailed granular version of CCO-MAP #1500 "Rights". It is intended where more structured and specific information is required and/or desired to be provided | | |
| CH | CCO-MAP | 7100 | 1 | Rights Indicator | A Yes/NO indicator. It purpose is to indicate that the 7000+ series of metadata elements will be utilized instead of #1500 | | |
| CH | CCO-MAP | 7200 | 3 | Access Policy | Specification of the access policy to the cultural resources in the form of usage permissions<br><br>01 = Public Access<br>02 = Limited Access (Please explain)<br>03 = No access | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | Note: "03" can apply where an cultural resource has been digitized but the original access condition applies (e.g. the 30 year rule, 2 (or "n") years after death of donor or entity to which the information pertains, etc. | | |
| CH | CCO-MAP | 7300 | 4 | Liability Disclaimer | Statement, where applicable, that owner of cultural resource is cannot be held responsible for the veracity of the contents or use of the cultural resource | | |
| CH | CCO-MAP | 7400 | 4 | Security restriction | Statement, where applicable, of security restrictions and conditions which apply to the cultural resource | | |
| CH | CCO-MAP | 7500 | 3 | Copyright Status | Information on the copyright holder and copyright status for this cultural resource | | |
| CH | CCO-MAP | 7501 | 3 | Cost/Charges Indicator | A Yes/NO indicator as to whether there any charges or costs associated with third party use of the cultural resource | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | | | |
| CH | CCO-MAP | 7510 | 3 | Cost/ Charges Code | A series of codes is used to indicate the most common types of costs/charges, namely,<br><br>01 = normally available without charge (reproductions of parts is authorized except for commercial purposes, provided the source is acknowledged;<br>02 = available on an exchange basis<br>03 = access/use charges are negotiable<br>04 = available on cost-recovery basis<br>05 = available based on fixed price or schedule of charges (purchase and/or license)<br>06 = terms of access/availability yet to be determined<br>00 = Other basis of costs/charges (Please specify) | | |
| CH | CCO-MAP | 7600 | 2 | Patent(s) | Information as to whether this cultural resource involves the use of | | |

| Source | IT Interface | | Requirement Status Code | Human Interface Equivalents (HIEs) | | | |
|---|---|---|---|---|---|---|---|
| | Metadata Application Profile ID | Data Element ID Code | | English | | French | |
| | | | | Element Name | Element Definition | Element Name | Element Definition |
| (00) | (01) | (02) | (10) | (52) | (53) | (62) | (63) |
| | | | | | patents | | |
| CH | CCO-MAP | 7700 | 3 | Privacy | Information on the cultural resource if by nature of its contents privacy protection requirements apply. | | |
| | CCO-MAP | 7800 | | (?Open) | | | |
| | | | | | | | |

# ANNEXES

| | | |
|---|---|---|
| Annex A | - | Element Names and Definitions of (New) ISO 15836:2003 "The Dublin Core Metadata Element Set" |
| Annex B | - | Adaptation of CanCore/LOM Elements for the CCO Matrix of Metadata Elements |
| Annex C | - | Summary of ISO 15706:2002 International Standard Audiovisual Number (ISAN) |
| Annex D | - | Extract from ISO/IEC 15944-1:2002 "Annex B (Normative) Codes Representing Presence Type Attributes: Mandatory, Conditionals, Optionals and Not Applicable" |
| Annex E | - | Notes on IT-Enablement and Multilingualism |
| Annex F | - | Strawman Diagram for a Web-Based Implementation |
| Annex G | - | List of Standards (International and National) Relevant to Project |
| Annex H | - | Bibliographic References |
| Annex I | - | Concordance Tables - Mapping the CCO Metadata Matrix to Dublin Core, CanCore/LOM, ISO 15706, TBITS-39 |
| Annex X | - | (Temporary) "Technical" Metadata |
| Annex Y | - | (Temporary) Implementation Guidelines |

# ANNEX A - ELEMENT NAMES AND DEFINITIONS OF (NEW) ISO 15836:2003 "THE DUBLIN CORE METADATA ELEMENT SET"

In this Annex, we present as:

- Table A.1 A summary of the changes made to the "names" of the Dublin Core Version 1.1 metadata elements when it was transformed into the new international standard ISO 15836 "The Dublin Core Metadata Element Set".

- Table A.2 The element names, labels, definitions and comments of the ISO 15836 metadata elements

This information is taken from a "expert contribution" to international metadata standards development work prepared by Dr.Jake V. Knoppers and M. Janice Pereira, namely: "*ISO/IEC JTC1/SC32 N0962 Comparative Analysis of Dublin Core Version 1.1 with New Standard ISO 15836 The Dublin Core Metadata Element Set*". {available at http://www.jtc1sc32.org }

**Table A.1: Changes in the Four "Tags" for each Dublin Core Metadata Element**

| Dublin Core Version 1.1 | ISO 15836 |
|---|---|
| Identifier | Element Name |
| Name | Label |
| Definition | Definition |
| Comment | Comment |
| | |

| Table A.2 ISO 15836:2003 The Dublin Core Metadata Element Set [English] | | | |
|---|---|---|---|
| **Element Name** | **Label** | **Definition** | **Comments** |
| Title | Title | A name given to the resource | Typically, a Title will be a name by which the resource is formally known |
| Creator | Creator | An entity primarily responsible for making the content of the resource | Examples of a Creator include a person, an organization, or a service. Typically, the name of a Creator should be used to indicate the entity |
| Subject | Subject and Keywords | The topic of the content of the resource | Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic by the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme. |
| Description | Description | An account of the content of the resource. | Examples of Description include but are not limited to, an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content. |
| Publisher | Publisher | An entity responsible for making the resource available. | Examples of a Publisher include a person, an organization, or a service. Typically, the name of a Publisher should be used to indicate the entity |
| Contributor | Contributor | An entity responsible for making contributions to the content of the resource | Examples of a Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity. |
| Date | Date | A date of an event in the lifecycle of the resource | Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and includes (among others) dates of the form YYYY-MM-DD. |
| Type | Resource Type | The nature or genre of the content of the resource | Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, DCMI Type Vocabulary [DCT]). To describe the physical or digital manifestation of the resource, use the Format element. |
| Format | Format | The physical or digital manifestation of the resource. | Typically, Format will include the media-type or dimensions of the resource. Format may be used to identify the software, hardware or other equipment needed to display or operate the resource. Examples of dimensions include size and duration. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [MIME] defining computer media formats). |
| Identifier | Resource | An unambiguous reference to the | Recommended best practice is to identify the |

| Table A.2 ISO 15836:2003 The Dublin Core Metadata Element Set [English] | | | |
|---|---|---|---|
| **Element Name** | **Label** | **Definition** | **Comments** |
| | Identifier | resource within a given context. | resource by means of a string or number conforming to a formal identification system. Formal identification systems include but are not limited to the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN). |
| Source | Source | A reference to a resource from which the present resource is derived. | The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to identify the referenced resource by means of a string or number conforming to a formal identification system. |
| Language | Language[19] | A language of the intellectual content of the resource. | Recommended best practice is to use RFC 3066 [RFC3066], which, in conjunction with ISO 639 [ISO639]. defines two- and three-letter primary language tags with optional subtags. Examples include "en" or "eng" for English, "akk" for Akkadian, and "en-GB" for English used in the United Kingdom. |
| Relation | Relation | A reference to a related resource. | Recommended best practice is to identify the referenced resource by means of a string or number conforming to a formal identification system. |
| Coverage | Coverage | The extent or scope of the content of the resource. | Typically, Coverage will include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN] and to use, where appropriate, named places or time periods in preference to numeric identifiers such as sets of |

[19] For this element ISO 15836 makes the following statements under comment; and, we quote: *"Recommended best practice is to use RFC 3066 [RFC3066], which, in conjunction with ISO 639 [ISO639]. defines two- and three-letter primary language tags with optional subtags".* Neither ISO 639-1 nor ISO 639-2 mention "optional sub-tags".

The comment statement should have noted that ISO 639-2 contains two sets of 3-alpha codes; namely: (1) ISO-639-2/B which is bibliographic and has an English language view perspective for formulation of the 3-alpha codes; and, (2) ISO 639-2/T which is terminology oriented and has an international perspective. **Both JTC1/SC32/WG1 "Open edi" (or "e-business") and JTC1/SC32/WG2 "Metadata" have decided on the use of the ISO 639-2/T 3-alpha codes as their common default convention. It is recommended that Canadian Heritage adopt the same default convention.**

| Table A.2 ISO 15836:2003 The Dublin Core Metadata Element Set [English] | | | |
|---|---|---|---|
| **Element Name** | **Label** | **Definition** | **Comments** |
| | | | coordinates or date ranges |
| Rights | Rights Management | Information about rights held in and over the resource. | Typically, Rights will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompass Intellectual Property Rights (IPR), Copyright, and various Property Rights.<br>If the Rights element is absent, no assumptions can be made about any rights held in or over the resource. |
| | | | |

# ANNEX B - ADAPTATION OF CANCORE/LOM ELEMENTS FOR THE CCO MATRIX OF METADATA ELEMENTS

**CanCore/LOM Educational elements:** Use for resources that have a clear or intended educational purpose (e.g. are aimed at a specific grade level, are germane to curriculum outcomes, contain questions for discussion, etc.)

**Recommended Implementation Guidelines:**
Current version of CanCore Guidelines: http://www.cancore.ca/documents.html

**Elements:**

For each of these CanCore Metadata elements, we first provide their ID, title and definition as currently found in CanCore, then followed by their ID, title and definition as amended to suit the requirements and context of CCO.

1. **5.3:Interactivity Level:** The degree of interactivity characterizing this learning object. Interactivity in this context refers to the degree to which the learner can influence the aspect or behavior of the learning object.

   **2100: Learner Interactivity Level**: The degree of interactivity characterizing this cultural resources from a learning perspective.. Interactivity in this context refers to the degree to which the learner can influence the aspect or behaviour of this resource.

2. **5.5:Intended End User Role:** Principle user(s) for which this learning object was designed, most dominant first.

   **2200: Intended Learner User Role**: Principle user(s) for which this cultural resource was designed for use in a learning context.

   NOTE 1: A resource can be designed for use in multiple contexts. If there is more than one, the most dominant should be stated first.

3. **5.6:Context:** The principle environment within which the learning and use of this learning object is intended to take place.

   **2300: Learning Context**: The principle environment within which this cultural resources also as a learning resource and use of it as a learning resources is intended to take place.

4. **5.7:Typical Age Range:** Age of the typical intended user. This data element shall refer to developmental age, if that would be different from chronological age.

**2400: Learner Typical Age Range**: Age of the typical intended user of this cultural resource for learning purposes.

NOTE 1: This element shall be utilized to refer to the development age for which this cultural resource is intended to be used for learning purposes.

NOTE 2: If the "development age" differs from the chronological age, this should be stated.

5. **5.9:Typical Learning Time**: Approximate or typical time it takes to work with or through this learning object for the typical intended target audience.

   **2500: Typical Learning Time**: Approximate or typical time it takes to work with or through this cultural resource from a learning perspective for the typical intended target audience.

# ANNEX C - SUMMARY OF ISO 15706:2002 INTERNATIONAL STANDARD AUDIOVISUAL NUMBER (ISAN)

1. The international standard for the description of audiovisual works and their registration is ISO 15706:2002 (E) Information and documentation - International Standard Audiovisual Number (ISAN). This ISO standard (currently available in English language only) was prepared by Technical Committee ISO/TC 46, Information and documentation, Subcommittee SC9, Identification and description. The ISAN project is administered by the International Federation of Film Producers Associations (FIAPF), in association with, the Association of International Collective Management of Audiovisual Works (AGICOA), and the International Confederation of Societies of Authors and Composers (CISAC).

2. ISO 15706:2002 defines an audiovisual work as:

> **3.1**
> **audiovisual work**
> work consisting of a sequence of related images, with or without accompanying sound, which is intended to be made visible as a moving image through the use of devices, regardless of the medium of initial or subsequent fixation.

3. Other definitions and terms of ISO 15706 relevant to this project include: "3.3 composite audiovisual work"; "3.4 registrant"; "3.5 registration agency"; and "3.6 serial audiovisual work". These four (4) terms are defined as follows.

> **3.3**
> **composite audiovisual work**
> audiovisual work which contains one or more other audiovisual works or parts of audiovisual work.
>
> EXAMPLES A feature film which contains parts of animated cartoons or other film clips; a television program that contains footage from previously produced feature films, from episodes of television series, or from other audiovisual works.
>
> **3.4**
> **registrant**
> producer of an audiovisual work, authorized proxy of such a producer, or other such entity or individual, registered within the ISAN system for the purposes of obtaining an ISAN for audiovisual works.

**3.5**
**registration agency**
agency appointed by the Registration Authority for this International Standard for the purposes of assigning ISAN to registrants.

**3.6**
**serial audiovisual work**
audiovisual work produced in individual episodes or parts which bear a relationship to each other and, usually a common title for the whole series.

4. Examples of audiovisual works to which an ISAN may be issued include: [Ref: ISO 15706:2002 Annex A (Normative), A.7]

- motion pictures, (e.g., a feature film);
- short films;
- trailers, i.e., previews;
- productions for television or other means of delivery, including episodes of serial audiovisual works such as television series;
- industrial, educational and training films;
- commercials;
- broadcasts and recordings of live events such as sports events and newscasts; and,
- composite and multimedia works if they contain a significant audiovisual component, including non-linear, (e.g., interactive) audiovisual components.

5. Examples of works to which an ISAN shall not be issued include: [Ref: ISO 15706:2002 Annex A (Normative), A.8]

- any non-audiovisual element of an audiovisual work, (e.g., the soundtrack, the screenplay, or a single image from an audiovisual work);
- sound recordings;
- still photographs, slide sets and similar static images; and,
- multimedia works that do not contain a significant audiovisual component.

6. With respect to versioning, collections/items, etc., the following requirements are of relevance.

**6.1 Versioning**

Here ISO 15706:2002 states:
*Versions of an audiovisual work may be identified as such by using a supplementary identifier or code in conjunction with the ISAN for the audiovisual work.*

*Note: Specifications for version identification are in development but are outside the scope of this International Standard.*

Some examples of versions and other kinds of changes for which a new ISAN shall not be assigned are:

- different language versions, whether subtitled or dubbed;
- a change in the rights or ownership of an audiovisual work;
- different formats or resolution, (e.g., analogue or digital; wide screen or "pan and scan");
- editing for the purposes of television broadcast; and,
- changes in the physical carrier(s) for an audiovisual work.

Further details regarding the identification of versions are available from ISAN agencies.
[Ref: Annex A.9 (Normative)]

### 6.2 Composite audiovisual works

ISO 15706 states that:
*A composite audiovisual work may be issued its own ISAN, independent of any ISAN that may have been issued for the component part(s).*

*An ISAN issued to a composite audiovisual work shall not replace any ISAN that may have been issued to the component part(s).*
[Ref: Annex A.10 (Normative)]

### 6.3 Serial audiovisual works

With respect to serial audiovisual work, see definition above, ISO 15706 states that

*Each episode or part of a serial audiovisual work shall be issued its own ISAN.*

*No meaning shall be attached to sequential ISAN regarding the order in which episodes were commissioned, produced or aired.*

*The ISAN agencies shall facilitate the ISAN registration process for individual episodes within a serial audiovisual work, by simplifying the application procedures and descriptive information required for individual episodes as described in D.3 and the users' guide available from ISAN agencies.*
[Ref: Annex A.11 Normative]

# ANNEX D - EXTRACT FROM ISO/IEC 15944-1:2002 "ANNEX B (NORMATIVE) CODES REPRESENTING PRESENCE TYPE ATTRIBUTES: MANDATORY, CONDITIONALS, OPTIONALS AND NOT APPLICABLE"

This Annex D contains an Annex taken verbatim from the new international "e-business" standard ISO/IEC 15944-1:2002 *Information Technology - Business Agreement Semantic Descriptive Techniques - Part 1: Operational Aspects of Open-edi for Implementation.*

The ISO/IEC JTC1 considers ISO/IEC 15944-1:2002 to be a generic and foundation standard in support of e-business, e-government, e-commerce, etc. It has therefore made this standard publicly available for free. {See <http://www.jtc1.org> under "Freely available documents"}.

Open-edi scenarios are composed of several building blocks including Open-edi scenario attributes, and role attributes, information bundles (IBs) (as well as attributes of Semantic Components (SCs)). All attributes must be specified at all times, i.e., in order to ensure explicitness and unambiguousness in the formal specification of Open-edi scenarios and scenario components. However, the nature and function of these attributes will differ depending on the context, i.e., the goal of the business transaction. And although all attributes must be specified, the actual values assigned to these attributes may contain statements ranging from "mandatory" to "not applicable" (N/A). Further, at times there are interworkings and dependencies among attributes within each scenario component as well as among the scenario components themselves, i.e., Conditionals.

The five basic presence-type attribute types are:

— Mandatory

— Conditional

— — mandatory subject to a Conditional

— Optional; and,

— Not Applicable.

**Rule B-1**
**These presence-type attributes shall be accounted for in OeDT representations of an Open-edi scenario.**

The coding convention for "presence" is presented in Table-01[20].

[20] In this table, only the equivalent linguistic expressions in the ISO English, ISO French language and ISO Spanish language equivalents are provided. This table is expandable to cover any number of equivalent linguistic expressions (and their mnemonics), (e.g., German, Russian, Chinese, Japanese, etc.), especially if one uses ISO/IEC 10646-1:200 *Information Technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane/Technologies de l'information — Jeu universel de*

**Table-01[21]: Codes Representing Presence-Type Attributes: Mandatory, Conditionals, Optional and Not Applicable**

| IT Interface | | Human Interface / Equivalent Linguistic Expressions | | | | | |
|---|---|---|---|---|---|---|---|
| | | ISO English (eng) | | ISO French (fra) | | ISO Spanish (esp) | |
| Table ID (1) | Code (2) | Mnemonic (3) | Expression (4) | Mnemonic (5) | Expression (6) | Mnemonic (7) | Expression (8) |
| 15944-1:01 | 1 | M | Mandatory | O | Obligatoire | O | Obligatorio |
| 15944-1:01 | 2 | C | Conditional | C | Conditionnel | C | Condicional |
| 15944-1:01 | 3 | m | mandatory subject to a Conditional | o | obligatoire en fonction d'un Conditionnel | o | obligatorio sujeto a un Condicional |
| 15944-1:01 | 4 | O | Optional | F | Facultatif | F | Facultativo |
| 15944-1:01 | 9 | N | Not Applicable | S | Sans objet | N | No aplica |
| | | | | | | | |

**Rule B-01:**
**For all attributes of Open-edi scenarios and scenario components, the presence-type attribute shall be specified by one of the codes of this table.**

**Rule B-02: Assignment of Codes[22]**
**Table 15944-1:01 is meant to be exhaustive meaning all the identified business requirements are included.**

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*caractères codés sur plusieurs octets (JUC) — Partie 1: Architecture et plan multilingue de base.* (a.k.a Unicode).

[21] Notes to Table 01:

— 1) The "(en)", "(fr)", and "(es)" are taken from ISO 639:1988 *Codes for the representation of names of languages/Codes pour la représentation des noms de langue.*

— 2) The unique and unambiguous Table Identifier is composed of the number and part of this standard, i.e., "15499-1", and the table number within that standard, i.e., "01" using the colon (:) as the separator.

— 3) The columns for mnemonic, i.e., Columns "3", "4", "5", and "7" represent (1) present linguistic-based characters in use; and, (2) assist in mapping to linguistic neutral codes in Column "2". (Mnemonics are "memory aids/aides-mémoire").

[22] This table incorporates some of the elements of development work in progress in support of a new standard. See further CD ISO/IEC 18022 *"Information technology - IT-enablement of Widely-Used Coded Domains"*. This standard is under development by ISO/IEC JTC1/SC32 WG2 - Metadata.

Should business requirements, within the scope of this table, be identified which require additional conditions, these can be added. Should the number of required added codes necessitate migrating to double-digit codes, this possibility is foreseen. Change from a single digit to a double-digit code will require change of "9" to "99" for "Not Applicable". The highest possible digit in a numeric code set, i.e., "9", "99", "999", etc., is a reserved code for "Not Applicable".

Addition of any other presence-type codes are considered user extensions and should be registered, i.e., via use of ISO/IEC 15944-2.

**Rule B-03:**
**Code 1 = (Mandatory/Obligatoire/Obligatorio) is deemed to be self-explanatory, i.e., the attribute must have a value.**

**Rule B-04:**
**If Code 2 = (Conditional/Conditionnel/Condicional) is used, the Condition must be specified in the form of one or more rules which must include the provisions to be met for the value for the attribute.**

**Rule B-05:**
**If Code 3 = (mandatory subject to a Conditional/obligatoire en fonction d'un Conditionnel/ obligatorio sujeto a un Condicional) is used, the Conditional to which the attribute is related must be specified and referenced including dependencies.**

**Rule B-06:**
**Code 4 = (Optional/Optionnel/Facultativo) is exactly that, no conditions of any kind apply.**

Whether or not an actual value is assigned to an attribute with a Code 4 is completely discretionary.

**Rule B-07:**
**Use of Code 5 = (Not Applicable/Sans objet/No aplica) is used to state explicitly that the attribute is not applicable and there thus are no values to be found in any instantiation of the attribute.**

Examples include those pertaining to there not being any constraints, specific security or communications service requirements, etc. It is expected that in scenarios developed involving internal constraints only as well as in "simple" scenarios, the Code 5 will be used frequently with respect to the specification of scenarios, scenario attributes and/or scenario components as stated in Clauses 8 and 9 of this standard.

# ANNEX E - NOTES ON IT-ENABLEMENT AND MULTILINGUALISM

In this Annex E, we present some notes on IT-enablement and multilingualism based on Canadian-led development work on the new international metadata standard titled "ISO/IEC 18022 IT-enablement of Widely-Used Coded Domains".

For an example of the application of ISO/IEC 18022 to Dublin core in an IT-enabled and multilingual Coded Domain, see document ISO/IEC JTC1/SC32 N0949 "(Draft) Applying an ISO/IEC 18022 Approach to Dublin Core as an IT-enabled Coded Domain with Multilingual Equivalency: A Business Case Study - Canada Federal Government" (2003-01-21). {This document can be found at <http://www.jtc1sc32.org>}

The overall purpose of ISO/IEC 18022 is to provide a methodology and tools to

(1) transform existing enumerated value domains, sets of codes representing "XYZ", sets of data element attributes, etc. into IT-enabled versions;

(2) by adding to "data/metadata" as but one of three components in a business transaction, namely, "process" and "Person" as other sources of coded domains pertaining to decision making, commitment exchange, permitted states, etc.

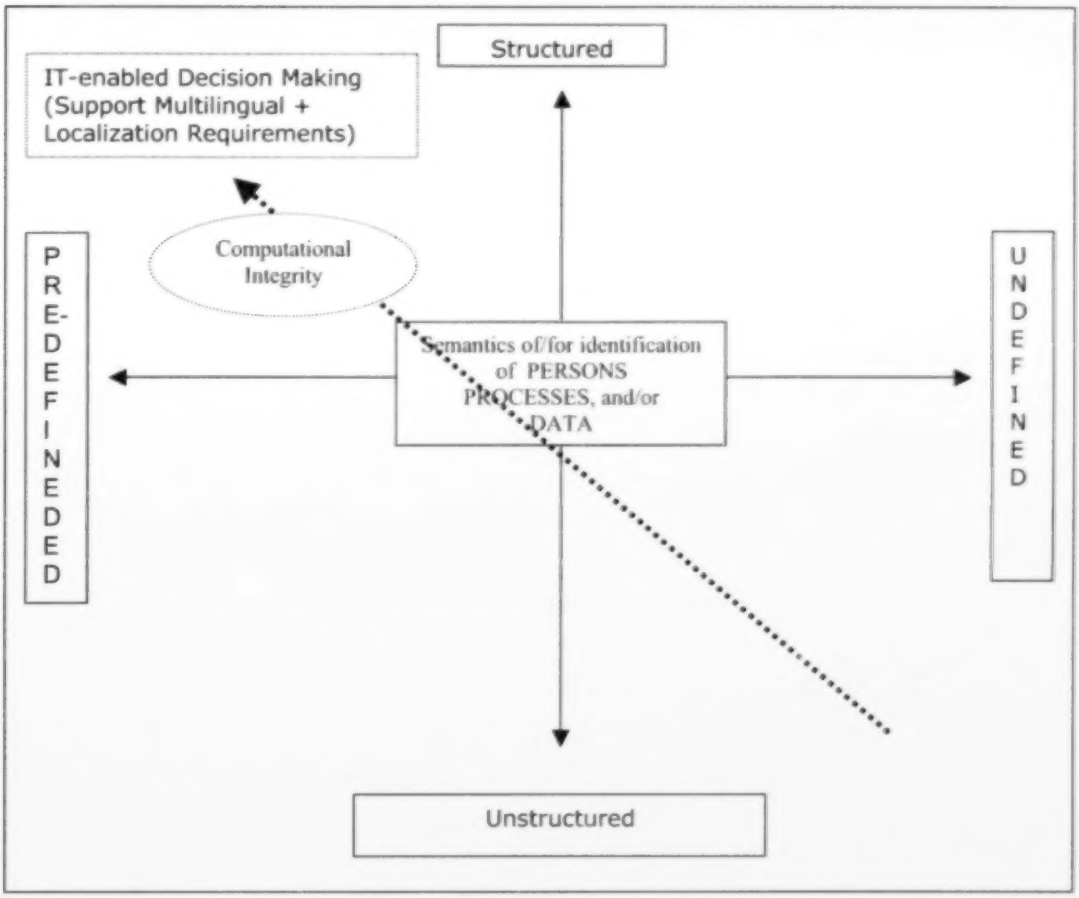
(3) provide those creating new "coded domains" a standardized methodology and tool for developing and managing the same (including "life cycle" aspects) in an IT-enabled manner (including computational integrity);

(4) with respect to the above ensure/maximize capability of being able to support in an IT-enabled manner

- localization requirements
- human interface equivalency requirements of a linguistic nature
- human interface equivalency requirements of a non-linguistic nature including those for which the semantics are identified via unambiguous symbols, glyphs, etc.

It is realized that the above applies only to those coded domains for which the rulebase as it applies to Persons, processes and/or data is (or can be) **predefined and structured** as well as agreed to by all concerned parties. It is realized that in e-learning, as in metadata, and other areas, the ranges of predefined <-> undefined and structured <-> unstructured represent levels of unambiguity.

The following illustrative figure identifies the "quadrant" of the focus of ISO/IEC 18022 work (and of ISO/IEC 15944-5). The figure is adapted from Figure 22, Clause 6.4.2 in ISO/IEC 15944-1:2002 "*Informative technology – Business agreement semantic descriptive techniques – Part 1: Operational aspects of Open-edi for implementation.*"




{See further document JTC1/SC36 N0462 titled "*SC32/WG1 "Open-edi" and SC32/WG2 "Metadata" Projects and Documents of Particular Relevance to SC36 CLFA Objectives and Requirements* ", 2003-04-04 prepared by Dr. Jake Knoppers.}

# ANNEX F - STRAWMAN DIAGRAM FOR A WEB-BASED IMPLEMENTATION

The approach taken at the strategic level in the development of this CCO Metadata Matrix is based on a methodology and approach which is IT-enabled and bilingual (E/F) with multilingual expandability. Consequently, the architecture and structural design aspects for a web-form-based implementation have already been (essentially) completed.

Here is a strawman diagram of a web-based implementation.

# ANNEX G - LIST OF STANDARDS (INTERNATIONAL AND NATIONAL) RELEVANT TO PROJECT

A concerted effort in this project has been made to utilize international and national standards as much as possible. Those of which specific parts were used in the development of the CCO Metadata Matrix are cited in the Report itself. Here follows a list of international and national standards consulted in the preparation of this Report. They are presented in "numeric" order.

ISO 639-2:1998 (E) *Codes for the representation of names of languages - Part 2 : Alpha-3 code/ (F) Codes pour la représentation des noms de langue- Partie 1 : Code alpha-3.*[23]

ISO 1087-1:2000 (E/F) *Terminology work — Vocabulary —Part 1:Theory and application / Travaux terminologiques — Vocabulaire —Partie 1:Théorie et application*

ISO 1087-2:2000 (E/F) *Terminology work — Vocabulary —Part 2:Computer applications Travaux terminologiques — Vocabulaire —Partie 2:Applications logicielles*

ISO 2108:1992 (E/F) *Information and documentation -- International standard book numbering (ISBN) / Information et documentation -- Système international pour la numérotation des livres (ISBN)*

ISO 3166-1:1997 (E/F) *Codes for the representation of names of countries and their subdivisions - Part 1:Country codes / Codes pour la representation des noms de pays et de leurs subdivisions - Partie 1: Codes pays*

ISO 3297:1998 (E/F) Information and documentation -- International standard serial number (ISSN) / Information et documentation -- Numéro international normalisé des publications en série (ISSN)

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[23] There are two sets of 3-alpha language codes, namely, 1) a bibliographic and "English" language oriented code set known as ISO 639-2/B; and 2) a terminology oriented code set whose codes as based on the names of the language in that language which is known as ISO 639-2/T. In the area of Open-edi (or "e-business" including e-commerce, e-government, etc., ISO/IEC JTC1 SC32/WG1 "Open-edi", the ISO 639-2/T 3-alpha is the default code set for use in its standards. In the area of "metadata", ISO/IEC JTC1 SC32/WG2 "Metadata", the ISO 639-2/T3-alpha code is also the default code set for use in its standards. {See further the JTC1/SC32 document N0672 "*Need for a standard "default" convention for referencing ISO 639-2 "Codes for the representation of names of languages" in Open-edi business transactions, e-commerce, e-business, etc.*", *2001-09-04*.}

ISO/IEC 11179-1 *Information technology – Specification and standardization of data elements – Part 1: Framework for the specification and standardization of data elements*

ISO/IEC 11179-3:1994 (E/F) *Information technology - Specification and standardization of data elements -Part 3:Basic attributes of data elements Technologies de /'information – Spécification et normalisation des éléments de données -Partie 3: Attributs de base des éléments de données*

ISO/IEC 11179-3:2003 (E) *Information technology — Metadata registries (MDR) — Part 3:Registry metamodel and basic attributes*

ISO/IEC 10646-1:200 *Information Technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane/Technologies de l'information — Jeu universel de caractères codés sur plusieurs octets (JUC) — Partie 1: Architecture et plan multilingue de base.* (a.k.a Unicode).

ISO 15706:2002 *"Information and documentation – International Standard Audio-Visual Number (ISAN) / Information et documentation – Numéro international normalise d'œvre audiovisuelle(ISAN)*

ISO 15836:2003 *"The Dublin Core Metadata Element Set"*

ISO/IEC TR 15938*: Information technology -- Multimedia content description interface -- Part 8: Extraction and use of MPEG-7 descriptions (available in English only).*

ISO/IEC 15944-1:2002 *"Information technology – Business agreement semantic descriptive techniques – Part 1: Operational aspects of Open-edi for implementation"* {Note: This international standard has been made available free of charge by the ISO/IEC since it is a generic, foundation standard for e-business. See http://www.jtc1.org under "freely available documents"}.

ISO/IEC draft CD 18022 *"Information technology - IT-enablement of Widely-Used Coded Domains"*

ISO/IEC TR 21000-1:2001 *Information technology -- Multimedia framework (MPEG-21) -- Part 1: Vision, Technologies and Strategy (available in English only)*

ISO/IEC 21000-2:2003 *Information technology -- Multimedia framework (MPEG-21) -- Part 2: Digital Item Declaration (available in English only)*

ISO/IEC 21000-3:2003 *Information technology -- Multimedia framework (MPEG-21) -- Part 3: Digital Item Identification (available in English only)*

IEEE (2002). IEEE P1484.12.2/D1, 2002-09-13 Draft Standard for Learning Technology - Learning Object Metadata
http://ltsc.ieee.org/doc/wg12/LOM_1484_12_1_v1_Final_Draft.pdf

Canadian National Standard CGSB 171.3:1995 *"Directory Information Describing Digital Geo-Referenced Data Sets"/ « Information de répertoire décrivant les ensembles de données numériques à référence spatiale «* (IT-enabled version)

# ANNEX H - BIBLIOGRAPHIC REFERENCES

This Annex contains a list of some of the bibliographic references of particular relevance to the completion of the CCO Metadata Strategy. Where available, the URL references are provided.

CanCore. (2003). CanCore Guidelines Version 1.1.
http://www.cancore.ca/documents.html

Friesen, Norm; Hessemeier, Susan; Fisher, Susan; Roberts, Anthony; Habbirk, Scott, "CanCore: Principles and Positions on Learning Object Metadata", 2003-02-19, published as document ISO/IEC JTC1/SC36 N0430 (available at http://jtc1sc36.org/doc/36N0430.pdf)

Knoppers, Jake V. Th. "*Global electronic commerce through localization and multilingualism*", Computer Standards and Interfaces, 20(1998)1001-109

Knoppers, Dr. Jake V. Th. and Pereira, M. Janice, "*Maximizing Bilingual/Multilingual e-Learning Capability Through Use of "Identifiers" instead of "Names"*", 2002-08-22, published as document ISO/IEC JTC1/SC36N0307 (available at http://www.jtc1sc36.org/doc/36N0307.pdf).

Knoppers, Dr. Jake V. Th. and Pereira, M. Janice, "*(Draft) Applying an ISO/IEC 18022 Model Approach to Dublin Core as an IT-enabled Coded Domain with Multilingual Equivalency: A Business Case Study - Canadian Federal Government*", 2003-01-17, published as document ISO/IEC JTC1/SC32 N0949, (available at http://www.jtc1sc32.org).

Knoppers, Dr. Jake V. Th. and Pereira, M. Janice, "*Comparative Analysis of Dublin Core Version 1.1 with the New Standard ISO 15836 "The Dublin Core Metadata Element Set*", 2003-02-21, published as document ISO/IEC JTC1/SC32 N0962 (available at http://www.jtc1sc32.org).

Knoppers, Dr. Jake V. Th. "*SC32/WG1 "Open-edi" and SC32/WG2 "Metadata" Projects and Documents of Particular Relevance to SC36 CLFA Objectives and Requirements* ", 2003-04-04, published as document JTC1/SC36 N0462 (available at http://jtc1sc36.org/doc/36N0462.pdf)

ISO/IEC JTC1/SC32 document N0672 "*Need for a standard "default" convention for referencing ISO 639-2 "Codes for the representation of names of languages" in: Open-edi business transactions, e-commerce, e-business, etc.*" , 2001-09-04. {This paper was prepared by M. Janice Pereira and Dr. Jake V. Knoppers. It is available at http://www.jtc1sc32.org .

# ANNEX X - (TEMPORARY) "TECHNICAL" METADATA

*Note: This is a temporary Annex. We have used it to "park" information on possible "technical" metadata elements. The metadata elements in the draft CCO Metadata Matrix are on the whole "descriptive" in nature.*

*Digital resources especially those which are multimedia in nature have many additional metadata elements which are more "technical" in nature. They are also much more numerous in nature*[24]*. They are found in standards of ISO/IEC JTC1/SC29 - Multimedia, (e.g., JPEG, MPEG, MHEG, etc.).*

As an example here, we provide a MGEG7 based Multimedia profile.

**MPEG7/Multimedia Profile:** Use for multimedia resources. Use as listed for audio and video resources; use italicized video format elements for still images.

***[Applicability of ISO 15706 ISAN needs to be reviewed here also]***

**Recommended Implementation Guidelines:**
No guidelines documentation exists for these elements. Users are directed to the document from which these elements have been derived (Hunter, Martinez, 2000) and to (DCMI, 2002)

- Hunter, J. Martinez, J. M. (2000). MPEG-7 harmonisation with Dublin Core: current status and concerns. http://archive.dstc.edu.au/RDU/staff/jane-hunter/m6160.doc
- DCMI (2002). DCMI Moving Pictures Special Interest Group. http://www.dublincore.org/groups/moving-pictures/

**Elements:**

Audio Format Metadata

1. **MediaInformation.MediaProfile.MediaFormat.FileSize:** File size in bytes
2. **MediaInformation.MediaProfile.MediaFormat. AudioSamplingRate:** Sampling rate for audio in Hz.
3. **MediaInformation.MediaProfile.MediaFormat.BitRate:** Bit rate of compressed stream in bits/s.
4. **MediaInformation.MediaProfile.MediaFormat.Duration:** Duration of the AV content

[24]One must keep in mind that the primary motivating factor behind the Dublin Core Initiative was the development of an AACR II and MARC "light", i.e., as a sub-set of the numerous "tags" for cataloguing a bibliographic item.

5. **MediaInformation.MediaProfile.MediaFormat.FileFormat:** Compression format (type code like AVI, MPEG-1, MPEG-2...)
6. **MediaInformation.MediaProfile.MediaFormat.AudioChannels:** Number of Audio Channels

Video/Image Format Metadata

7. ***MediaInformation.MediaProfile.MediaFormat.FrameWidth:*** *Frame width in pixels*
8. ***MediaInformation.MediaProfile.MediaFormat.FrameHeight:*** *Frame height in pixels.*
9. ***MediaInformation.MediaProfile.MediaFormat.Color:*** *Colour, B&W, Colour depth*
10. ***MediaInformation.MediaProfile.MediaFormat.FileFormat:*** *Compression format (type code like AVI, MPEG-1, MPEG-2 or LWZ, JPEG)*
11. ***MediaInformation.MediaProfile.MediaFormat.Resolution:*** *Resolution of Image/Frame in dpi*
12. **MediaInformation.MediaProfile.MediaFormat.Duration:** Duration of the AV content
13. **MediaInformation.MediaProfile.MediaFormat.FrameRate:** Frame rate in Hz
14. **MediaInformation.MediaProfile.MediaFormat.Sound:** Sound, stereo, mono, dual
15. **MediaInformation.MediaProfile.MediaFormat.Medium:** Physical storage medium e.g. tape, CD, DVD

# ANNEX Y - (TEMPORARY) IMPLEMENTATION GUIDELINES

The focus of this project is at the strategic level. However, the implementation of the CCO metadata will require the development of implementation guidelines.

In this Annex Y, we provide draft text of some work completed early on in this project of an "Implementation Guideline" nature.

**METADATA Elements – Guidelines**

[Note: This section needs a lot more work and needs to be updated to reflect the contents of the five (5) matrices venetually agreed upon and presented in Chapter 4 above.]

**PRIMARY: TBITS 39 Mandatory elements + 3**

**Conditions for use:** Complete for ALL resources, except where individual resources are being described only on a collection or aggregate level.

**Recommended Implementation Guidelines:**

1. Using Dublin Core http://www.dublincore.org/documents/usageguide/
2. CIMI Guide to Best Practice: Dublin Core; Version 1.1 http://www.cimi.org/old_site/documents/meta_bestprac_v1_1_210400.pdf

**Elements:**

1. **Title:** A name given to the resource. Comment: Typically, Title will be a name by which the resource is formally known.
2. **Creator:** An entity primarily responsible for making the content of the resource. Comment: Examples of Creator include a person, an organization, or a service.
3. **Language:** A language of the intellectual content of the resource. Comment: Recommended best practice is to use RFC 3066 [RFC3066] which, in conjunction with ISO639 [ISO639]), defines two- and three primary language tags with optional subtags. Examples include "en" or "eng" for English, "akk" for Akkadian", and "en-GB" for English used in the United Kingdom.
4. **Date:** A date of an event in the lifecycle of the resource. Comment: Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and includes (among others) dates of the form YYYY-MM-DD.
5. **Subject:**. A topic of the content of the resource. Comment: Typically, Subject will be expressed as keywords, key phrases or classification codes that

describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme.

6. **Rights:** Information about rights held in and over the resource. Comment: Typically, Rights will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights. If the Rights element is absent, no assumptions may be made about any rights held in or over the resource.
7. **Format:** The physical or digital manifestation of the resource. Comment: Typically, Format may include the media-type or dimensions of the resource. Format may be used to identify the software, hardware, or other equipment needed to display or operate the resource. Examples of dimensions include size and duration. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [MIME] defining computer media formats).
8. **Identifier:** An unambiguous reference to the resource within a given context. Comment: Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Formal identification systems include but are not limited to the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN).

**Secondary: Dublin Core unqualified / TBITS**

**Conditions for use:** Highly recommended for use (as appropriate) for ALL resources, except where individual resources are being described only on a collection or aggregate level. (Semi-specialized application, medium-sized applications).

**Recommended Implementation Guidelines:**

1. Using Dublin Core http://www.dublincore.org/documents/usageguide/
2. CIMI Guide to Best Practice: Dublin Core; Version 1.1 http://www.cimi.org/old_site/documents/meta_bestprac_v1_1_210400.pdf
3. CanCore Guidelines (for selected elements): http://www.cancore.ca/documents.html

**Elements:**

1. **Description:** An account of the content of the resource. Comment: Examples of Description include, but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content.
2. **Publisher:** An entity responsible for making the resource available. Comment: Examples of Publisher include a person, an organization, or a service.

3. **Contributor:** An entity responsible for making contributions to the content of the resource. Comment: Examples of Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity.
4. **Type:** The nature or genre of the content of the resource. Comment: Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, the DCMI Type Vocabulary [DCT1]). To describe the physical or digital manifestation of the resource, use the FORMAT element.
5. **Source:** A Reference to a resource from which the present resource is derived. Comment: The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to identify the referenced resource by means of a string or number conforming to a formal identification system.
6. **Relation:** A reference to a related resource. Comment: Recommended best practice is to identify the referenced resource by means of a string or number conforming to a formal identification system.
7. **Coverage:** The extent or scope of the content of the resource. Comment: Typically, Coverage will include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) and to use, where appropriate, named places or time periods in preference to numeric identifiers such as sets of coordinates or date ranges.

**Tertiary: CanCore/LOM or RSLD or MPEG7 Profile**

**Conditions for Use:** Generally, use for specialized and/or small-scale applications where indexing expertise is available, and resources are educational (CanCore/LOM) or multimedia (MPEG7 Profile) in character. Note that a single collection-level (RSLD) description should be provided for a collection as a whole, especially where the items in that collection have no or minimal metadata associated with them.

**CanCore/LOM Educational elements:** Use for resources that have a clear or intended educational purpose (e.g. are aimed at a specific grade level, are germane to curriculum outcomes, contain questions for discussion, etc.)

**Recommended Implementation Guidelines:**
Current version of CanCore Guidelines: http://www.cancore.ca/documents.html

**Elements:**

1. **5.2:Learning Resource Type:** Specific kind of learning object. Indicate the potential educational use(s) or type(s) of content associated with the learning object. Comment: Use LOM vocabulary values as defined and inter-related below in conjunction with an additional, referenced vocabulary that extends these.
2. **5.5:Intended End User Role:** Principle user(s) for which this learning object was designed, most dominant first.
3. **5.6:Context:** The principle environment within which the learning and use of this learning object is intended to take place.
4. **5.7: Typical Age Range:** Age of the typical intended user. This data element shall refer to developmental age, if that would be different from chronological age.
5. **5.11:Language:** The human language used by the typical intended user of this learning object.

**RSLP (Research Support Libraries Programme) Collection Description Profile:** Use to describe a collection as a whole, especially where the items in that collection have no or minimal metadata associated with them. Six elements in this set of metadata elements are identified as mandatory, 14 are optional. This group of metadata elements represents a profiling (or simplification) of the RSLP data model specifically for use in the CCOP program.

[Note: ISO standard for audiovisual number (ISAN) ISO 15706 and proposed changes (via Canada Nat'l Library) to ISO 2108 ISBN are being explored/analysed to see how these cover these requirements. In the meantime there is the RSLP]

**Recommended Implementation Guidelines:**
No guidelines documentation exists for these elements. Users are directed to the RSLP Collection Description Schema, and associated documentation:
http://www.ukoln.ac.uk/metadata/rslp/

**Elements:**

1. **Strength** (sub-property of dc:description): An indication (free text or formalised) of the strength(s) of the collection. **Mandatory**
2. **Access Control** (sub-property of dc:rights): A statement of any access restrictions placed on the collection, including allowed users, charges, etc. **Mandatory**
3. **Object Name** (sub-property of dc:subject): An object name associated with the items in the collection.
4. **Agent Name** (sub-property of dc:subject): An personal or corporate name associated with the items in the collection. **Mandatory**
5. **Spatial/Temporal** (Dc Coverage: Qualified): the spatial/temporal coverage of the items in the collection.

6. **Accumulation Date Range** (a sub-property of dc:date): The range of dates over which the collection was accumulated.
7. **Contents Date Range** (a sub-property of dc:date): The range of dates of the individual items within the collection. **Mandatory**
8. **Relation** (Dc Relation: 6 Qualified Elements)
    a. dcq:hasPart (sub-property of dc:relation) The identifier or name of a second collection contained within the current collection.
    b. dcq:isPartOf (sub-property of dc:relation) The identifier or name of a second collection that contains the current collection.
    c. cld:hasDescription (sub-property of dc:relation) The identifier or name of a second collection that describes the current collection (for example, the catalogue for the current collection).
    d. cld:isDescriptionOf (sub-property of dc:relation) The identifier or name of a second collection that is described by the current collection.
    e. cld:hasAssociation (sub-property of dc:relation) The identifier or name of a second collection that is associated by provenance with the current collection.
    f. cld:hasPublication (sub-property of dc:relation) The identifier or name of a publication that is based on the use, study, or analysis of the collection.
9. **Access Conditions:** Hours of access, classes of permitted user, etc.
10. **See Also** (sub-property of dc:relation): The identifier of a resource that provides further information about this location (typically the URL for an organisational home page).
11. **Administrator** (sub-property of dc:publisher): The identifier for an agent who has responsibility for the physical or electronic environment in which the collection is held. **Mandatory**
12. **Access** (sub-property of dc:identifier): The full postal address for the physical location of the physical collection.
13. **Postcode:** The post code or zip code for the physical location of the collection.
14. **Country:** The country in which the collection is physically located.
15. **Locator** (sub-property of dc:identifier): The online location (URL) of an online (digital) collection. **Mandatory**